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decomposing fused chlorides, iodides,, and other compounds, according to the law before established (116, etc.), and the opportunity of collecting certain of the products, without any loss, by the use of apparatus of the nature of those already described (524., 549; etc.),, render it probable that the voltaic battery may become a useful and even economical manufacturing instrument; for theory evidently indicates that an equivalent of a rare substance may be obtained at the expense of three or four equivalents of a very common body, namely, zinc: and practice seems thus far to justify the expectation. In this point of view I think it very likely that plates of platina or silver may be used instead of plates of copper with advantage, and that then the evil arising occasionally from solution of the copper, and its precipitation on the zinc (by which the electro-motive power of the zinc is so much injured), will be avoided (783).

^f iv. *On the Resistance of an Electrolyte to Electrolytic Action, and on Interpositions*

743. I have already illustrated, in the simplest possible form of experiment (626, 645), the resistance established at the place of decomposition to the force active at the exciting place. I purpose examining the effects of this resistance more generally; but it is rather with reference to their practical interference with the action and phenomena of the voltaic battery, than with any intention at this time to offer a strict and philosophical account of their nature. Their general and principal cause is the resistance of the chemical affinities to be overcome; but there are numerous other circumstances which have a joint influence with these forces (770, 776, etc.), each of which would require a minute examination before a correct account of the whole could be given.

744. As it will be convenient to describe the experiments in a form different to that in which they were made, both forms shall first be explained. Plates of platina, copper, zinc, and other metals, about three-quarters of an inch wide and three inches long, were Fig. 48 associated together in pairs by means of platina

wires to which they were soldered, fig. 48, the plates of one pair being either alike or different, as might be required. These were arranged in glasses, fig. 49, so as to form Volta's crown of cups. The acid or fluid in the cups never covered